

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

MOODY et al

Serial No.: 10/512,145

Filed: 25th April, 2003

Confirmation No. 9415

Group Art Unit: 1713

Title: Monomers containing polyalkoxyalkylenes and
polymer supports therefrom

DECLARATION OF SATYA KUCHIMANCHI

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

I, Satya Kuchimanchi, declare as follows:

1. I am an Associate Director in the Process Development Group of Avecia Biotechnology Inc (hereafter "Avecia") in Milford, Massachusetts. My duties include research and development in the field of oligonucleotide manufacturing. I have been employed in my current position since 2006. Prior to that, from 2002 to 2006 I was employed as Group leader in Avecia Biotechnology's Process Development Group. From 2001 to 2002, I was employed by OriGenix as Principal Scientist. My duties included research and development to develop nucleoside and oligonucleotide based anti-viral therapeutics.
2. My academic qualifications are, Ph.D in organic chemistry (1987, Osmania University, Hyderabad, India); Post doctoral research at Indian Institute of Technology, Kanpur, India (1987-1989), University of Montpellier, France (1989-91) and Vanderbilt University, Nashville, TN, USA (1991-1995). I am the author or co-author of four journal articles and ten presentations all in the field of oligonucleotide chemistry.
3. I am the inventor or co-inventor of US patent application number 10/264,313 entitled "Attachment of thiophosphate tethered oligonucleotides to a solid surface", US patent application number 11/578,961 entitled "Process for the Removal of Exocyclic Base Protecting Groups" and International patent application number

PCT/GB2006/004324 entitled "Process for the Preparation of Poly(alkoxylated) Oligonucleotides"

4. I have read and understood the disclosure of WO00/02953 concerning the nature of protecting groups that can be employed, and the types of monomer that can be polymerized. I have also read the subject U.S. Application No. 10/512,145 and understand the nature of the invention described and claimed therein. I have also considered the Examiner's comments in the Office action of May 23, 2007.

5. I understand that the invention described and claimed in Application No. 10/512,145 is based on the finding that poly(aryl)methane protecting groups can be used to protect the hydroxypoly C₂₋₄ alkyleneoxy chain in certain types of monomers which are to be polymerized by free radical polymerization. Based on my experience, I consider it unobvious that the indicated poly(aryl)methane groups, such as trityl, could be effectively used as protecting groups for such monomers if polymerized by free radical polymerization.

6. I am aware of poly(aryl)methane protecting groups, such as trityl groups, their properties and the conditions under which they are employed. Poly(aryl)methane groups are readily removed by acid cleavage. The reason poly(aryl)methane protecting groups are readily cleaved under acidic conditions is because the poly(aryl)methane substitution pattern is extremely effective at stabilising what would otherwise be a highly unstable electron deficient species, normally a trityl cation. Conditions suited to the formation of electron-deficient species would therefore be expected to be liable to cause deprotection of the poly(aryl)methane groups. The preferred conditions taught for the polymerisation of monomers in WO00/02953 on page 4, lines 22 to 25, and the only conditions exemplified, are specifically intended to generate electron deficient species in the form of free radicals. Accordingly, it is my opinion that the skilled person would not contemplate the employment of poly(aryl)methane protecting groups under conditions suited to the generation of electron deficient species, based on the teaching of WO00/02953, out of concern that such groups would not remain attached to provide the required protective action under the polymerization conditions taught by the WO disclosure.

7. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both under § 1001 of Title 18 of the United States Code and that such wilful false

statements may jeopardize the validity of the application or any patent issuing thereon.



Satya Kuchimanchi

Date: October 19th, 2007